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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,691	09/15/2003	Teemu Sipila	KOLS.048PA	9770

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EXAMINER

ABRAHAM, ESAW T

ART UNIT	PAPER NUMBER
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2133

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/662,691

Applicant(s)

SIPILA, TEEMU

Examiner

Esaw T. Abraham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-10 and 12-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1 and 3-9 is/are allowed.
- 6) ☒ Claim(s) 10, 12-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

1. Claims **10, 12-18 and claim 19** remain pending.

Claims **1 and 3-9** are allowed.

Claim Rejections - 35 USC § 101, Non Statutory

Claims 10, 12-18 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter because:

2. Claims **10, 12-18** are directed to "a method of performing Viterbi decoding comprising: calculating a set of consecutive metrics using metrics of a previous stage of the trellis calculated and storing the calculation results into a memory and calculating $\log_v P$ path metrics per one memory read/write operation pair, wherein P is the number of data paths and Y is the number of branches from/to a state (as in claim 10)".

This claimed subject matter lacks a practical application of a judicial exception (law of nature, abstract idea, naturally occurring article/phenomenon) since it fails to produce a useful, concrete and tangible result. Specifically, this claimed subject matter does not produce a tangible result because the claimed subject matter fails to produce a result that is limited to having real world value rather than a result that may be interpreted to be abstract in nature as, for example, a thought, a computation, a calculation, or manipulated data. More specifically, the claimed subject matter provides a method of decoding comprising the steps for calculating metrics and storing the calculated results without a limitation of the decoding step. This produced result remains in the abstract and, thus, fails to achieve the required status of having real world value.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere CO.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claim **19** is rejected under 35 U.S.C. 103(a) as being unpatentable over Hosevar et al. (U.S. PN: 6,690,750) in view of Rossman (U.S. PN: 5,027,374).

As per claim 19:

Hosevar et al. teach or disclose a Viterbi decoder (110) (see FIG. 6) and a method of decoding plurality of trellis stages (see FIG. 5) simultaneously via a cascaded ACS (122) (see FIG. 7 and col. 6 lines 15-30). Further, Hosevar et al. teach that the cascaded ACS (122), in conjunction with the state metric memory (126),

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determines a set of accumulated state metrics (125), which also referred to as path metrics, for each stage in the trellis as the decoding process moves forward in time and furthermore the cascaded ACS (122) performs additions, subtractions, and comparisons, with a set of incoming branch metrics (134) and selects new state metrics from which path decision values (124) are determined (see col. 7, lines 19-43). Although, Hosevar et al. in figure 7 disclose four ACS units (150b-156b) connected or coupled to each other (for example, the output of ACS 150b is connected to the input of ACS 152b and the output of ACS 152b is connected to ACS 154b etc..) and this is accomplished by evaluating a metric at each state to determine which one of two incoming branches provides the smallest or preferably largest next state metric (125) depending on the particular algorithm implementation desired (see col. 7, lines 26-31), Hosevar et al. **do not explicitly** teach that the outputs of the ACS units are **directly** connected to the inputs of the ACS units and used in the calculation of the next stage of the trellis. **However**, Rossman in an analogous art teaches a circuit ACS array (comprising ACS units or circuits) connected directly between the ACS circuits in series (see figure 3 elements 20-23) derived from trellis of figure 1 (for example: the output of element 22 is directly connected to the input of element 20 and the output of 20 is directly connected to the input of element 21 etc...(see col. 4, lines 17-33 and claim 5). **Therefore**, it would have been obvious to a person having an ordinary skill in the art at the time the invention was made to implement the ACS circuits of Hosevar using a direct connection between the ACS circuits as taught by Rossman for calculating trellis next stages. **This modification** would have been obvious because a person having

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ordinary skill in the art would have been motivated to in order to calculate new metrics for all states concurrently and therefore has high efficiency and data throughput (see col. 7, lines 17-21).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US PN: 6,111,835 Honama

US PN: 7,020,827 Gatherer et al.

5. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Esaw Abraham whose telephone number is (571) 272-3812. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are successful, the examiner's supervisor, Albert DeCady can be reached on (571) 272-3819. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and (571) 273-8300 for after final communications.


Information regarding the status of an Application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or PUBLIC PAIR. Status information for unpublished applications is available through Private Pair only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have

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questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Esaw Abraham

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